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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788.697	02/27/2004	Timothy R. Coulter	VRT0119US	6928

60429	7590	03/13/2007		

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EXAMINER
ROSE. HELENE ROBERTA

ART UNIT	PAPER NUMBER
2163	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

	Application No.	Applicant(s)
Office Action Summary	10/788,697	COULTER ET AL.
	Examiner	Art Unit	
	Helene Rose	2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *1/10/2007*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☒ Claim(s) *1,8,11 and 17-79* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Detailed Action

1. In response to communication entered on 12/27/2006, Claims 1-37 are presently pending. No claims were amended, cancelled, nor added.

2. Applicants arguments with respect to claims 1-37 have been considered, but are not persuasive.

Claim Objections

3.   Claims 1, 8, 11, 17-19, 25 and 35 are objected to because of the following informalities:

Claims 1, 8, 11, 17-19, 25 and 35 have a comma vs. a semi-colon, and also within Claim 18, a ":" should be inputted after the word comprising. Appropriate correction is required.

Claim Rejections – 35 USC-102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   Claims 1-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Watanabe (US Publication No. 2004/0260873, Filing Date: June 17, 2003).

Claims 1, 11, 19, and 37:

Regarding Claims 1, 11, 19, and 37, discloses a method/machine readable medium/data process utilizing the same functionality. Watanabe teaches a method/machine readable

medium/data process having a plurality of instructions executable by a machine embodied

therein, wherein said plurality of instructions when executed cause said machine to perform a

method comprising:

maintaining a copy of a data change log at a primary node, wherein said data change log

at said primary node is associated with a primary data volume of said primary node (paragraph

[0007] wherein the primary storage maintains a primary storage change table indicating modified

primary storage data portions, and during backup, the change table is read sequentially, and

where a table entry indicates a modified primary data portion, a copy of the modified data

portion is transferred to the backup system and the backup system then either separately stores

the copy of the modified primary data portion, e.g., as with versioning, or replaces the

corresponding backup data portion with the modified primary data portion, Watanabe); and

said copy of said data change log is maintained at a data recovery node (paragraph

[0007], wherein the primary storage maintains a primary storage change table indicating

modified primary storage data portions, and during backup, the change table is read sequentially,

and where a table entry indicates a modified primary data portion, a copy of the modified data

portion is transferred to the backup system and the backup system then either separately stores

the copy of the modified primary data portion, e.g., as with versioning, or replaces the

corresponding backup data portion with the modified primary data portion, Watanabe);

detecting a failure of said primary data volume (paragraph [0006] and [00094], wherein

when failure occurs at the primary site storage, host or both), wherein an administrator, which

can reside in one or more of transfer manager 421, replication manager 441, storage device

controls 422, 442, primary/secondary hosts or an external, e.g., system monitoring/control server,

detects the error and issues a "takeover" command to secondary storage 404, Watanabe); and

updating a secondary data volume of a secondary node using said copy of said data

change log in response to said detecting (paragraph [0087], wherein Remote copy engine 1021

further sets a remote copy update indicator in remote copy update map 1011 to indicate that the

remote copy data has been updated, Watanabe).

Claims 2, 12, 20, and 36:

Regarding Claims 2, 12, 20, and 36, Watanabe teaches wherein maintaining a real-time

copy of said data change log at said primary node (paragraph [0106], wherein Remote copy

engine 1021 further sets a remote copy update indicator in remote copy update map 1011 to

indicate that the remote copy data has been updated, Watanabe).

Claims 3, 13, and 21:

Regarding Claims 3, 13, and 21, Watanabe teaches wherein replicating

data to be written to said primary data volume from said primary node to said secondary node

(paragraph [0111], wherein replication engine 1001 responds to a write primary reference map

request, where the primary and secondary storage are not coordinated or dynamic referencing is

provided, by initiating, i.e. secondary storage, reference manager 1007 and wherein reference

manager 1007 responds by storing the primary reference map and wherein replication engine

1001 further responds to a read request by initiating access controller 1117. Access controller

1117 initiates copy selector 1115, which determines, based on predetermined copy selection

criteria whether remote copy or local copy data is to be restored to the primary storage, and

returns to access controller 1117 the determination, Watanabe).

Claim 4:

Regarding Claim 4, Watanabe teaches wherein receiving a request to perform a write

operation on said primary data volume (paragraph [0015], wherein the replication manager can,

for example, further be configured to conduct access requests including a direct read/write

request or a request diverted from the primary storage, that correspond with a data item or data

item group, or that include a request to restore primary storage data, or the determining can

impose one or more store, read, data portion selection/ synchronization, requester, receiving

device, throughput, timing, security or other preferences, among other combinable alternatives in

accordance with a particular application, Watanabe);

storing data associated with said write operation substantially simultaneously on said data

change log and said real-time copy of said data change log in response to said receiving

(paragraph [0111], wherein during a redirection operation, replication engine 1001 responds to a

write primary reference map request, where the primary and secondary storage are not

coordinated or dynamic referencing is provided, by initiating, i.e. secondary storage, reference

manager 1007 and Reference manager 1007 responds by storing the primary reference map, and

replication engine 1001 further responds to a read request by initiating access controller 1117;

paragraph [0057], wherein an update such as a data backup of primary storage 111 data, wherein

for example, replication manager 105b can respond to a storage request via storage controller

105a by causing a primary copy e.g., 105c, to be stored and upon substantially complete storage

of the primary copy, replication manager 105b can further cause a secondary, local copy of the

data to be stored, e.g., 105d, or if an error occurs during storage of the primary copy, then

replication manager 105b can avoid storage or further replicating of the replicated copy and

[0077] Watanabe).

Claim 5:

Regarding Claim 5, Watanabe teaches wherein said replicating said data to be written to

said primary data volume to said secondary data volume (Refer to claim 3, wherein this

limitation is substantially the same/or similar to claim 3, Watanabe).

Claims 6, 15, 23, and 34:

Regarding Claim 6,15, 23, and 34, Watanabe teaches wherein said volume replication

module comprises a volume replication module configured to asynchronously replicate data to be

written to said primary data volume to said secondary data volume (paragraph [0067] and

[0068], Watanabe).

Claims 7, 16, and 24:

Regarding Claims 7, 16, and 24, Watanabe teaches wherein receiving a manual update

initiation indication (paragraph [0014], wherein secondary storage includes an updated local

copy indicator indicating local copy data that has been updated from a first updated secondary

storage portion to a second secondary storage portion; and paragraph [0057], wherein replication

manager 105b further maintains a status indicator indicating the status of primary storage data

and replicated data, e.g., indicating successful/unsuccessful storage or, for at least a replicated

copy, that can further indicate a current or prior update state or a sequence or time/date update

indicator of one or more prior updates, Watanabe); and

updating said secondary data volume using said real-time copy of said data change log in response to said receiving (Refer to claims 1 and 4, wherein this limitation is substantially the same/or similar to claims 1 and 4, Watanabe).

Claims 8, 17 and 25:

Regarding Claims 8, 17, and 25, discloses a method and data processing system utilizing the same functionality, Watanabe teaches wherein said real-time copy of said data change log comprises a plurality of entries (paragraph [0079], wherein data stores is interpreted to be the entries, Watanabe); and

said updating comprises:

identifying an entry of said plurality of entries as corresponding to an incomplete write operation on said primary data volume (paragraph [0080], wherein a suspend state is defined, Watanabe); and

updating said secondary data volume using said entry (Refer to claims 1 and 7, wherein this limitation is substantially the same as claims 1 and 7, Watanabe).

Claims 9, 18, and 26:

Regarding Claims 9, 18, and 26, discloses a method and data processing system utilizing the same functionality, Watanabe teaches a method and data processing system wherein copying a block of data from said real-time copy of said data change log to a staging log at said secondary node, said block of data comprising a plurality of entries;

applying each of said plurality of entries to a data change log at said secondary node in response to said copying (paragraph [0079], Watanabe); and

updating said secondary data volume using said data change log at said secondary node

(Refer to claim 1, wherein this limitation is substantially the same/or similar to claim 1,

Watanabe).

Claim 10:

Regarding Claim 10, Watanabe teaches wherein detecting a recovery of said primary data

volume (Refer to claim 1, wherein this limitation is substantially the same or similar to claim 1,

Watanabe); and

resynchronizing said primary data volume and said secondary data volume in response to

said detecting (paragraph [0012], [0013], and [0078], Watanabe).

Claims 14 and 22:

Regarding Claims 14 and 22, Watanabe teaches wherein said maintaining said real-time

copy comprises:

receiving a request to perform a write operation on said primary data volume (Refer to

claim 4, wherein this limitation is substantially the same or similar to claim 4, Watanabe);

storing data associated with said write operation substantially simultaneously on said data

change log and said real time copy of said data change log in response to said receiving (Refer to

claim 4, wherein this limitation is substantially the same or similar to claim 4, Watanabe).

Claim 27:

Regarding Claim 27, Watanabe teaches a data processing system comprising:

a storage element to store a copy of a data change log at a primary node, wherein said

data change log at said primary node is associated with a primary data volume of said primary

node (Refer to claim 1, wherein this limitation is substantially the same or similar as claim 1,

Watanabe); and

a recovery module configured to update a secondary data volume of a secondary node

using said copy of said data change log in response to a failure of said primary data volume

(Refer to claim 1, wherein this limitation is substantially the same or similar as claim 1,

Watanabe).

Claim 28:

Regarding Claim 28, Watanabe teaches wherein said storage element comprises:

a storage element to store a real-time copy of said data change log at said primary node

(paragraph [0007], wherein the primary storage maintains a primary storage change table

indicating modified primary storage data portions and during backup, the change table is read

sequentially, and where a table entry indicates a modified primary data portion, a copy of the

modified data portion is transferred to the backup system, wherein the backup system then either

separately stores the copy of the modified primary data portion (e.g., as with versioning) or

replaces the corresponding backup data portion with the modified primary data portion,

Watanabe).

Claim 29:

Regarding Claim 29, Watanabe teaches a data processing system further comprising a

volume management module configured to mirror data to be written to said data change log to

said real time copy of said data change log (see abstract, wherein facilitating restoration of a

primary or secondary volume of a primary storage device or of a first or second secondary

storage via secondary storage device copying, and/or alternative, alternating or internal/external

application driven first and second (and/or further) secondary storage portion utilization,

Watanabe).

Claim 30:

Regarding Claim 30, Watanabe teaches wherein a volume replication module configured

to synchronously replicate data to be written to said data change log to said real-time copy of

said data change log (paragraph [0108], wherein Local copy manager initiates synchronization

manager 1003 to change the remote and local copy storage states to "synchronized", Watanabe).

Claim 31:

Regarding Claim 31, Watanabe teaches wherein said real-time copy of said data change

log comprises a plurality of entries (paragraph [0079], wherein data stores is interpreted to be

plurality of entries, Watanabe); and

said recovery module comprises a failover management module configured to identify

operation of said primary data volume and update said secondary data volume using said entry

(paragraph [0079], Watanabe).

Claim 32:

Regarding Claim 32, Watanabe teaches wherein failover management module configured

to copy a block of data comprising a plurality of entries from said real-time copy of said data

change log to a staging log at said secondary node (paragraph [0118], Watanabe).

Claim 33:

Regarding Claim 33, Watanabe teaches wherein said primary node comprises a volume

replication module configured to replicate data to be written to said primary data volume to said

secondary node (Refer to claim 5, wherein this limitation is substantially the same or similar to

claim 5, Watanabe).

Examiner's Response to Applicant 's Arguments/Remarks

Applicant Argues:

Applicant argues, prior art do not teach or fairly suggest claim 1 requirements of **"maintaining a**

copy of a data change log", as cited on page 11 of remarks.

Examiner Response:

Examiner is not persuaded. Referring to paragraph [007], wherein during backup, the change

table is read sequentially, wherein one after the other, and wherein a table entry indicates a

modified primary data portion, a copy of the modified data portion is transferred to the backup

system, wherein the backup system then either separately stores the copy of the modified

primary data portion, wherein this is interpreted to be equivalent to "maintaining a copy of a data

change log", in which "separately storing" is interpreted to be the "two logs", or replaces the

corresponding backup data portion with the modified primary data portion.

Also see, paragraph [0044], wherein the storage controller provides for managing primary

storage operation, wherein support functions can include maintaining data space references,

wherein such reference can include one or more files, folders, directories, and so forth, which is

also interpreted to be "maintaining a log", wherein primary storage is interpreted to be storing

data"; and paragraph [0057], wherein during a update such as a data backup of primary storage,

causing a primary copy to be stored, wherein upon substantially complete storage of the primary

copy, wherein replication can further cause a local copy to be stored and during a complete

backup, a transfer manager can store complete primary and replicated copies of the primary data,

wherein can store "complete primary" is interpreted to be "a data change log" and wherein

"replicated copies" is interpreted to be a "copy".

Prior Art of Record

1. Watanabe   (US Publication No. 20040260873)

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing
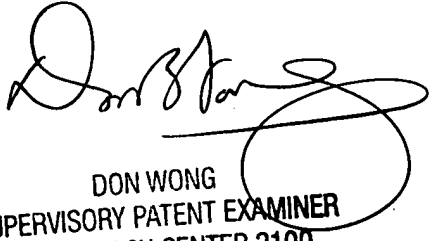
date of this final action.

Point of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Rose whose telephone number is (571) 272-0749. The examiner can normally be reached on 8:00am - 4:30pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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